

## **9<sup>th</sup> Grade TE-1905 Fundamentals of Engineering Technology**

Fundamentals of Technology is a prerequisite course for most of the Technology Education systems. Communication skills and tools are the major focus of this course. These same skills are central to all subsequent technology courses. The computer and other electronic devices are necessary for teaching an understanding of contemporary communications, manufacturing, power/energy/transportation and construction systems. An engineering focus of problem solving requires students to define a given problem, conduct appropriate research, develop solutions to the problem, construct prototypes, and evaluate their work. This course is designed to introduce students to those principles and skills used in subsequent technology courses. Students learn to sketch solutions to problems, create technical drawings and presentations, build models, and apply creative problem solving methods. Emphasis is placed on accessing and communicating information, using simple and complex tools in a safe manner, and increasing the students' awareness of the historical and contemporary implications of technology. Students are introduced to computer-aided graphics, design software, and computer-aided manufacturing. Students develop an understanding of the tools, techniques, and processes of technology using design principles, computers, problem solving and model making.

## **10<sup>th</sup> Grade Semester 1 - Introduction to Engineering**

This STEM course is a basic introduction to engineering for all students. Students who complete this course will learn the concepts necessary in order to develop their ideas into solutions that will improve our lives. Exciting hands-on learning activities like data comparison of heart rates, rating consumer products, destructive testing and 3D solid modeling apply math, science, history and English content from other courses in a STEM experience.

## **10<sup>th</sup> Grade Semester 2 - 3D Solid Modeling**

Learning 3D design is an interactive process. Students learn best when they can explore the practical applications of the concepts that they learn. This STEM course has many activities and exercises that enable students to put design concepts into practice. Students create their ideas such as artificial heart components, extreme sports equipment, hip replacement parts, robotic arm components, musical instruments and their parts as well as many others. Ideas become reality in this course.

## **11<sup>th</sup> Grade Yearlong - Design for Manufacturing**

Design for Manufacturing teaches general manufacturing techniques. Calculations and analysis tools are used to design and redesign student's concepts. This course applies and integrates ideas that have been generated in other courses and generates life size models and prototypes. Industry standard software and machinery are used to manufacture student's ideas with verification programs to determine the ability for a plan to be mass produced. Certification will advance students toward continuing education and career opportunities in the fields of engineering, design and machine operation.



## **12<sup>th</sup> Grade Yearlong Capstone - Principles of Engineering**

This STEM course makes a contribution to the curriculum by providing opportunities for students and teachers to link content together and apply it to solve problems. More and more jobs demand advanced skills, requiring that people be able to learn, reason, think creatively, make decisions, and solve problems. An understanding of science, technology, engineering and math and their methods contribute in an essential way to these skills. Principles of engineering is a team based advanced course designed for most students. Students who complete this course will engage in real world case studies and learning activities that focus on the engineering process and making the world a better place to live and work in.

## **12<sup>th</sup> Grade Additional Elective - Architecture featuring Green + Sustainable Design**

Architecture is more than just walls around us. The form and function of the spaces we live and work in are at the heart of how any design comes to life. This course will investigate how the structure is designed and build as well as the layout of spaces between the walls. Students will be introduced to a variety of concepts including green building and sustainable design in architecture. Students will apply the concepts introduced to a 'dream home' that they design and model.